SPACETIME DIAGRAMS

The x,t axes represent the “rest” frame, and the x’,t’ axes the “moving” frame. The world line of the origin of the x’t’ frame is represented by the t’ axis. In this diagram, the moving frame is traveling at 6/10 the velocity of light. The heavy dashed line represents the world line of a light ray. The horizontal light dashed lines parallel to the x-axis are the “planes of simultaneity” for the x,t frame, and the angled light dashed lines parallel to the x’-axis are the planes of simultaneity for the x’,t’ frame. Notice that t_A is before t_B, while t'_B comes before t'_A. This is an example of the relativity of temporal order of space-like separated events. When two events cannot be connected by any sort of causal signal, then their temporal order is strictly a function of a choice of reference frame.